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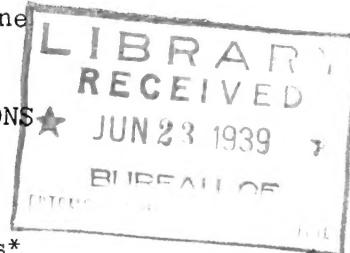
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United States Department of Agriculture  
Bureau of Entomology and Plant Quarantine

A POWER-DRIVEN MIXER FOR MAKING EMULSIONS  
AND OTHER SPRAYS IN THE FIELD

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In experimental field spraying it is often desirable to have a power-driven mixer for making emulsions and for mixing other spray materials that are difficult to handle with ordinary hand methods. Spray mixtures can be made at the laboratory where electricity is available, but it is often desirable to do the mixing in the field. This is particularly true when working with unstable emulsions that must be used immediately after mixing, with bulky mixtures that are not easily transported, or with materials that are incompatible if mixed together in concentrated form for more than a few minutes.

The apparatus described here has proved satisfactory for the purpose at the Yakima, Wash., laboratory. It consists of a used gasoline washing-machine motor mounted in a steel frame, a flexible power shaft, an agitator, and a mixing container. It is shown in figures 1 and 2. The motor mounting differs from that of some of the models which are available in that it is suspended from the frame rather than resting on a base. However, the frame can easily be changed to fit any motor. It also has a built-in chain and sprocket arrangement geared to turn the power take-off at approximately 1,750 r. p. m. Some motors do not have this feature. The frame on which the motor is mounted is made of welded 1-inch angle iron and is 19 inches long, 15 inches wide, and 42 inches high. The height should be such that the flexible shaft will not be bent at too sharp an angle.

The flexible power shaft is 42 inches long, although several units can be used if a greater length is needed. This type of shaft is available in a number of weights for use at various speeds, is made by a number of manufacturers, and is usually carried in

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stock by hardware stores. The necessary end fittings may be purchased with the shaft. They include the motor connection which fits over the end of a 1/4-inch shaft and a chuck that holds the end of the agitator shaft.

The agitator can be purchased, or a satisfactory one can be made from sheet metal by cutting it in the shape of a propeller. For ordinary use an agitator 3 inches long with 1-inch blades, set to force the spray mixture toward the bottom of the container, is satisfactory. This is attached to the end of a 1/4-inch steel rod long enough to reach from the chuck to approximately 1 inch from the bottom of the container.

This container consists of an ordinary 50-pound bucket, such as is commonly used for paints and insecticides, to which have been welded a bracket and clamp to hold the end of the power shaft. Since this bucket is not readily detachable from the agitator, it is necessary to pour the contents into a second bucket before transferring it to the spray tank. One suggested improvement is the designing of a detachable container to eliminate this inconvenience.

In operation the motor and stand are securely fastened back of the cab of a 1/2-ton truck, and the mixing bucket rests near the tail gate where it is readily accessible. However, the entire apparatus can be removed from the truck if desired.

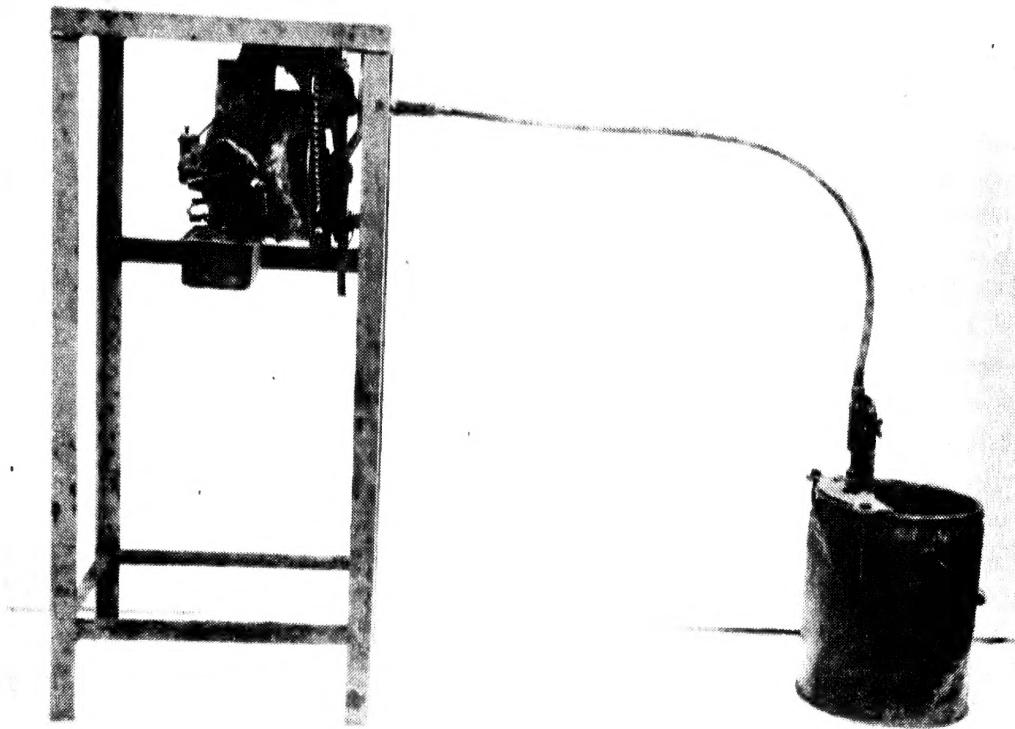


Figure 1.—Power-driven spray mixer.

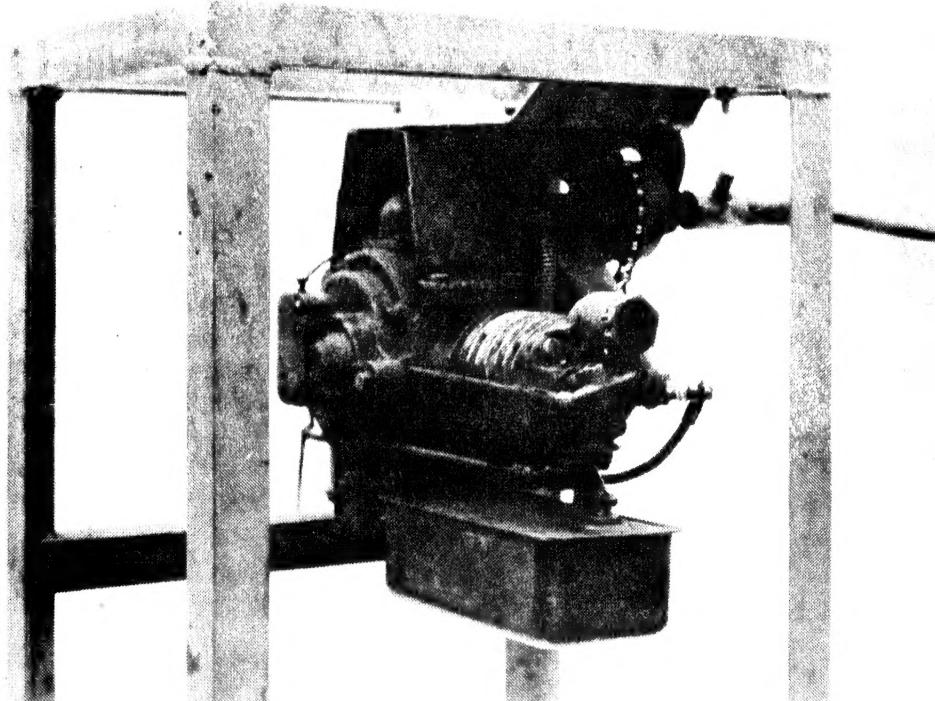


Figure 2.—Close-up of motor and frame assembly.

